Image Registration of Real-time Video Data using the SONIC Reconfigurable Computer Platform

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Abstract

This paper is concerned with the image registration problem as applied to video sequences that have been subjected to geometric distortions. This work involves the development of a computationally efficient algorithm to restore the video sequence using image registration techniques. An approach based on motion vectors is proposed and is found to be successful in restoring the video sequence for any affine transform based distortion. The algorithm is implemented in FPGA hardware targeted for a reconfigurable computing platform called SONIC. It is shown that the algorithm can efficiently restore the video data in real-time.